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Conference Abstract

Sigma 1 receptor modulators as a new weapon against multiple sclerosis

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Abstract

Multiple Sclerosis (MS) is a disabling immune-mediated neurological disease, affecting more than 2.5 million people worldwide. Regardless of the broad arena of pharmaceutical strategies against MS, up to now a concrete cure is still missing. The drugs against MS currently used in the clinical practice are mainly biological immunomodulatory therapeutics, which are effective and safe during the short-term treatment. Nevertheless, they are suitable only for systemic administration and fairly expensive, hence academic and industrial environments are still addressing their efforts towards the development of new drugs Chamberlain et al. (2016). Considering that neurodegeneration is a contributory factor in the onset of MS, Sigma 1 Receptor (S1R) could play a crucial role in MS Collina et al. (2013), Peviani et al. (2014).

During the years, our interdisciplinary research group identified compound (*R*)-RC-33, as a new selective S1R agonist with an excellent S1R affinity (K*i*= 1.8 nM) along with high selectivity over other receptors, including S2R, and good *in vitro* metabolic stability Rossi et al. (2010), Rossi et al. (2013), Marra et al. (2016). On the bases of these results, (*R*)-RC-33 has been selected as *lead* compound for MS preliminary biological assay. A pilot study was performed to evaluate the effect of the S1R agonist (*R*)-RC33 on rat Dorsal Root Ganglia (DRG) experimental model. Our encouraging results support the idea that S1R

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represents a novel appealing target for the treatment of neurodegeneration and a promising protein for the development of new drugs against MS.

Keywords

Sigma 1 receptors, Multiple Sclerosis, (R)-RC-33

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